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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
WANG, TED M	

ART UNIT	PAPER NUMBER
2634	

DATE MAILED: 10/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/629,429	DEMIR, ALPASLAN	
	Examiner	Art Unit	
	Ted M. Wang	2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 August 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *5-8,17,18 and 21-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *27* is/are allowed.

6)☒ Claim(s) *5-8,17,18,21,25 and 26* is/are rejected.

7)☒ Claim(s) *22-24* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, filed on 08/15/2005, with respect to claims 5-8, 17, 18, and 21-27 have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

2. Claim 21 is objected to because of the following informalities:

- In claim 21, line 1, change "1" to --- 5 ---.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 5, 6, 17, 21, 25, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. (US 2001/0021199) in view of Gunzelmann et al. (US 6,532,255).

- With regard claims 5, 25, and 26, Lee et al. discloses a system comprises:

  Means for Step 1 processing of a given sequence (paragraphs 7 and 8);

a first correlator or (match filter) (Fig.5 element 500) for determining a correlation between said given sequence and a stored sequence (paragraphs 35 and 36);

a second correlator (or match filter) (Fig.5 element 501) for determining a correlation between said given sequence and a stored sequence (paragraphs 35 and 36);

an error estimator (Fig.3 element 261 and Fig.5) for determining the error associated with the outputs of the first and second correlators (Fig.3 element 302 output ω and Fig.5 element 550 output ω); and

a voltage controlled oscillator (NCO) for adjusting frequency responsive to the integrated error estimate (Fig.3 element 303).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to replace the correlation with a matched filter since the examiner takes Official Notice of the equivalence of (matched filter) and (correlator) for their use in the receiver circuit and the selection of any of these known equivalents to maximize the signal with respect to unwanted signal.

Lee et al. discloses all of the subject matter as described in the above paragraph except for specifically teaching

a) the stored sequence which has been altered in phase and

b) a filter for selectively integrating the error estimate responsive to an initial or steady state conditions of the cell search process.

However, Gunzelmann et al. teaches a) the stored sequence which has been altered in phase that first means for applying a positive phase rotation to

said stored sequence (Fig.1 element 111 and column 4 lines 32-53) and second means for applying a negative phase rotation to said stored sequence (Fig.1 element 110 and column 4 lines 32-53), wherein, the elements 110 and 111 have the same frequency since they are only different from the phase (one is shifted in positive phase (+ Δ) and the other is shift in negative phase (- Δ)).

It is desirable to have the stored sequence which has been altered in phase in order to facilitate the accurate demodulation process (column 5 lines 10-15) so that the receiver quality is improved.

Gunzelmann et al. further teaches b) a filter for selectively integrating the error estimate responsive to an initial or steady state conditions (Fig.1 element 107).

It is desirable to have a filter for selectively integrating the error estimate responsive to an initial or steady state conditions in order to smooth the DC control voltage.

Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention was made to include the DLL circuit as taught by Gunzelmann et al. in which, the stored sequence which has been altered in phase and a filter for selectively integrating the error estimate responsive to an initial or steady state conditions, into Lees' frequency error compensator in order to facilitate the accurate demodulation process and smooth the DC control voltage so that the receiver quality is improved.

- With regard claim 6, Lee et al. further discloses that the given sequence is a primary synchronization code (PSC) sequence (Fig.2 element 252 and paragraphs 35 and 36).
- With regard claim 17, Lee et al. further discloses that the frequency adjustment is numerically controlled (Fig.3 element 303).
- With regard claim 21, means for periodically processing a synchronization code channel to provide location updates (Fig.2 elements 250 and 260, and paragraphs 10, 11, and 26-31).

5. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. (US 2001/0021199) and Gunzelmann et al. (US 6,532,255) as applied to claim 5 above, and further in view of Patapoutian (US 6,236,343).

- With regard claim 7, Lee et al. and Gunzelmann et al. disclose all of the subject matter as described in the above paragraph except for specifically teaching that the filter is a proportional integral (PI) filter.

  However, Patapoutian teaches that the filter is a proportional integral (PI) filter (Fig.1 element 29 and column 1 lines 45-62).

  It is desirable that the filter is a proportional integral (PI) filter in order to minimize the jitter of the PLL circuit so that the sensitivity to large bursty noises (column 2 lines 15-29) is reduced. Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention was made to include the PI loop filter as taught by Patapoutian into Lee et al. and Gunzelmanns' modified frequency error

compensator so as to minimize the jitter of the PLL circuit so that the sensitivity to large bursty noises is reduced.

- With regard claim 8, Lee et al. and Gunzelmann et al. disclose all of the subject matter as described in the above paragraph except for specifically teaching that the filter having a delay element of $1/(1-z^{-1})$.

  However, Patapoutian (cited previously) teaches that the filter is a proportional integral (PI) filter having a delay element of $1/(1-z^{-1})$ (Fig.1 element 18 and column 1 lines 46-60).

  It is desirable that the filter is a proportional integral (PI) filter having a delay element of $1/(1-z^{-1})$ in order to minimize the jitter of the PLL circuit so that the sensitivity to large bursty noises (column 2 lines 15-29) is reduced. Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention was made to include the PI loop filter a delay element of $1/(1-z^{-1})$ as taught by Patapoutian into Lee et al. and Gunzelmanns' modified frequency error compensator so as to minimize the jitter of the PLL circuit so that the sensitivity to large bursty noises is reduced.

6. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. (US 2001/0021199) and Gunzelmann et al. (US 6,532,255) as applied to claim 5 above, and further in view of Ando (US 5,994,932).

- With regard to claim 18, Lee et al. and Gunzelmann et al. disclose all of the subject matter as described in the above paragraph except for specifically

teaching that the frequency adjustment is voltage controlled (VCO) instead of numerically controlled (NCO).

However, Ando teaches that the frequency adjustment is voltage controlled (VCO) (Fig.1 element 103 and column 1 lines 30-40), which is an equivalent structure known in the art. Therefore, because these two (VCO is designed for an analog PLL circuit and NCO is designed for a digital PLL circuit) were art-recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to substitute the frequency adjustment VCO to the frequency adjustment NCO.

Allowable Subject Matter

7. Claim 27 is allowed.

8. Claims 22-24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is an examiner's statement of reasons for allowance.

- The prior art fails to teach an apparatus of Claim 27 that specifically comprises the following:

  -- The instant application is deemed to be directed to a non-obvious improvement over the admitted prior art of the instant application and the invention patented in Pat. No. US 6,826,644, US 6,532,255, US 6,236,343, US 5,994,932. The improvement comprises "a sequence locator and splitter responsive to a location output of said Step I

processing means for producing early, punctual and late frequency offsets based on the received sequence" as recited.

Conclusion

10. Reference US 6,826,644 is cited because they are put pertinent to the WCDMA initial cell searching with Step 1 processing. However, none of references teach detailed connection as recited in claim.

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

12. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ted M. Wang whose telephone number is 571-272-3053. The examiner can normally be reached on M-F, 7:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 571-272-3056. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ted M Wang
Examiner
Art Unit 2634

Ted M. Wang

STEPHEN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600